

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A two-color holographic recording medium comprising:

a crystal body including a lithium niobate single crystal or a lithium tantalate single crystal which has substantially stoichiometric composition and ~~includes~~ is doped with only Mn
~~as an impurity~~ in the range from 1 wt ppm to 100 wt ppm.

2. (currently amended): The two-color holographic recording medium according to claim 1,

said crystal body includes a first energy level, a second energy level, and a third energy level,

wherein said first energy level exists at ~~the~~ a deeper energy position than said second energy level measured from the bottom of a conduction band,

wherein said third energy level exists at ~~the~~ a deeper energy position than said second energy level measured from the bottom of the conduction band,

wherein carriers are excited from said first energy level to said second energy level by the irradiation of a gating light at a wavelength of 410nm or shorter,

wherein said carriers excited to said second energy level are trapped to said third energy level by the irradiation of a signal light and a reference light at a wavelength longer than said gating light.

3. (currently amended): The two-color holographic recording medium according to claim 1,

wherein a product $\alpha_g \cdot L$ of an optical absorption coefficient (α_g) of said lithium niobate single crystal or lithium tantalate single crystal with respect to ~~said a~~ gating light having a wavelength of 410 nm or shorter and a length (L) of said single crystal along said gating light incident direction is within a range of 0.5 to 2.0.

4 (currently amended): A holographic recording/reproducing apparatus for recording information in a two-color holographic recording medium and for reproducing information from said two-color holographic recording medium comprising:

a first irradiation means for irradiating said two-color holographic recording medium with a gating light having a wavelength of 410 nm or shorter; and

a second irradiation means for irradiating said two-color holographic recording medium with a signal light containing information to be recorded and a reference light,

wherein said gating light has a shorter wavelength than those of said signal light and said reference light,

wherein said two-color holographic recording medium comprises a crystal body including a lithium niobate single crystal or a lithium tantalate single crystal which has substantially stoichiometric composition and ~~includes~~ is doped with only Mn as an impurity in the range from 1 wt ppm to 100 wt ppm.

5. (new): A method for recording information on a two-color holographic recording medium comprising:

providing the two-color holographic recording medium comprises a crystal body including a lithium niobate single crystal or a lithium tantalate single crystal which has substantially stoichiometric composition and is doped with only Mn in the range from 1 wt ppm to 100 wt ppm;

irradiating the crystal body with a gating light having a wavelength of 410 nm or less;

irradiating the crystal body with a recording light with a wavelength greater than 410 nm during the irradiation of the gating light.

6. (new): The method according to claim 5, wherein said crystal body includes a first energy level, a second energy level, and a third energy level,

wherein said first energy level exists at a deeper energy position than said second energy level measured from the bottom of a conduction band,

wherein said third energy level exists at a deeper energy position than said second energy level measured from the bottom of the conduction band,

wherein carriers are existed from said first energy level to said second energy level by the irradiation of the gating light,

wherein said carriers existed to said second energy level are trapped to said third energy level by the irradiation of the recording light.

7. (new): The method according to claim 5, wherein the recording light comprises a reference light and a signal light, both with the same wavelength.

8. (new): The method according to claim 5, wherein a product $\alpha_g \cdot L$ of an optical absorption coefficient (α_g) of said lithium niobate single crystal or lithium tantalate single crystal with respect to said gating light and a length (L) of said single crystal along said gating light incident direction is within a range of 0.5 to 2.0.